

**Amendments to the Specification:**

Please replace the paragraph at page 1, lns. 7-12 with the following amended paragraph:

The present application is a continuation application of U.S. Patent Application No. 09/974,375 entitled "A BOARD-LEVEL CONFORMAL EMI SHIELD HAVING AN ELECTRICALLY-CONDUCTIVE POLYMER COATING OVER A THERMALLY-CONDUCTIVE DIELECTRIC COATING," naming as inventor Paul Mazurkiewicz, filed 10/09/01, now pending, which is a continuation-in-part application of U.S. Patent Application No. 09/812,274 entitled "A BOARD-LEVEL EMI SHIELD THAT ADHERES TO AND CONFORMS WITH PRINTED CIRCUIT BOARD COMPONENT AND BOARD SURFACES," naming as inventors Samuel M. Babb, Lowell E. Kolb, Brian Davis, Jonathan P. Mankin, Kristina L. Mann, Paul H. Mazurkiewicz and Marvin Wahlen, filed on 03/19/01 and now pending.

Please replace the paragraph at page 11, line 20 through page 12, line 9 with the following amended paragraph:

Specifically and in one embodiment, dielectric coating 102 has a viscosity of at least 45" #2 Zahn Cup (full body). In another embodiment, dielectric coating 102 has a viscosity in the range of 50-100" #2 Zahn Cup (full body). In one preferred embodiment, dielectric coating 102 has a viscosity of 70-95" #2 Zahn Cup (full body). A dielectric coating 102 having any of the above viscosity values can be applied uniformly using a conventional spray atomization technique. This enables dielectric coating 102 to completely access and coat the surfaces of the components and board that are located underneath component leads, between components and wiring board surfaces and other regions that are exposed yet difficult to access. Such features of the printed circuit board are referred to generally herein as cavities. In general, dielectric coating 102 can adhere to the materials utilized in the printed circuit board. Such materials include, but are not limited to, FR-4 such as polymethylmethacrylates, bisphenol-A based epoxy and fiberglass, ceramics such as aluminum oxide and silicon dioxide, silicon, polyimide (silicon wafers), polyethylene (sockets), polyethylene terephthalate, polystyrene (sockets), polyphenylsulfone or PPS (chip sockets), polyvinyl chloride or PVC (wire coverings), silicone rubbers such as RTV (various surfaces), aluminum, gold, stainless steel and low carbon steel, tin, lead, and others. Dielectric coating 102 preferably has an adhesion that enables it to pass the ASTM D-3359-97 ~~D-3359-83~~

Method A Tape Test using a 1" (25 mm wide) semi-transparent pressure-sensitive tape with an adhesion strength of 25-70 and, more preferably, 30-50 ounces per inch when tested in accordance with ASTM Test Method D-3330.

Please replace the paragraph at page 12, line 10 through page 12, line 18 with the following amended paragraph:

In one embodiment, dielectric coating 102 is comprised primarily of Clear Water Reducible Barrier Coat, Formula Number CQW-L200DF, manufactured by The Egyptian Coating Lacquer Manufacturing Company, Franklin, TN, USA. CQW-L200DF has a viscosity in the range of 50-60" #2 Zahn Cup (full body) and an adhesion that enables it to pass the ASTM ~~D-3359-97~~ ~~D-3359-83~~ Method A Tape Test using a 1" (25 mm wide) semi-transparent pressure-sensitive tape with an adhesion strength of  $40 \pm 2.5$ , ounces per inch when tested in accordance with ASTM Test Method D-3330. CQW-L200DF provides excellent adhesion to materials commonly found on a printed circuit board comprising, but not limited to, the materials noted above.

Please replace the paragraph at page 14, line 23 through page 15, line 7 with the following amended paragraph:

In one embodiment, such acrylic intermediate dispersions include, for example, the waterborne LOCTITE® product 394 Shadowcure™ urethane acrylate conformal coating available from the Loctite Corporation, Rocky Hill, CT, which has a thermal conductivity of approximately 0.16 W/mK when measured in accordance with ASTM F-433. Another acrylic intermediate dispersion is the waterborne LOCTITE® product 397 Shadowcure™ urethane acrylate conformal coating which has an ASTM F-433 thermal conductivity of approximately 2.17 W/mK. These intermediate dispersions serve as excellent dielectrics. For example, at 1kHz, Product 394 has a dielectric constant & loss of 3.3 and 0.015; at 1MHz, 2.9 and 0.020, when measured in accordance with ASTM D150. Product 394 has a volume resistivity of  $3.8 \times 10^{16}$  ohm-cm and a surface resistivity of  $7 \times 10^{16}$  ohms when measured in accordance with ASTM D257. At 1kHz, product 397 has a dielectric constant & loss of 4.6 and 0.045; at 1MHz, 3.8 and 0.048, when measured in accordance with ASTM D150. Product 397 has a volume resistivity of  $3.17 \times 10^{15}$  ohm-cm and a surface resistivity of  $2.36 \times 10^{16}$  ohms when measured in accordance with ASTM D257. The Technical Data Sheets for these two intermediate dispersions can be obtained from Loctite Corporation.

~~([www.loctite.com](http://www.loctite.com)).~~

Please replace the paragraph at page 15, line 8 through page 15, line 16 with the following amended paragraph:

Another embodiment of an acrylic intermediate dispersion suitable for use in the present invention is the waterborne HumiSeal® 1B12 or 1B31 acrylic conformal coatings available from HumiSeal Corporation, Woodside, NY. These two products also serve as good dielectrics and can be doped with thermal loading materials 1400. For example, the HumiSeal® 1B12 has a dielectric constant of 2.8 and surface resistivity of  $250 \times 10^{12}$  ohms when measured in accordance with ASTM D257. The HumiSeal® 1B31 has a dielectric constant of 2.5 and surface resistivity of  $800 \times 10^{12}$  ohms when measured in accordance with ASTM D257. The Technical Data Sheets for these two intermediate dispersions can be obtained from HumiSeal Corporation. ~~([www.humiseal.com](http://www.humiseal.com)).~~

Please replace the paragraph at page 15, line 17 through page 15, line 23 with the following amended paragraph:

As noted, intermediate dispersions can also have a urethane binder 1504. In one embodiment, such an intermediate dispersion is the above-noted Clear Water Reducible Barrier Coat, Formula Number CQW-L200DF, manufactured by The Egyptian Coating Lacquer Manufacturing Company. This intermediate dispersion has a water base liquid 1506 and a urethane binder 1504. The Technical Data Sheets for this intermediate dispersion can be obtained from The Egyptian Coating Lacquer Manufacturing Company. ~~([www.egyptcoat.com](http://www.egyptcoat.com)).~~

Please replace the paragraph at page 16, line 10 through page 16, line 23 with the following amended paragraph:

In one particular embodiment, thermal loading material 1400 is boron nitride. In some embodiments such as those in which boron nitride is added to an intermediate dispersion, the boron nitride is provided in powder form. Boron nitride is a man-made ceramic having highly refractory qualities with physical and chemical properties similar to carbon. In one embodiment, thermal loading material 1400 is a graphite-like boron nitride (g-BN), more commonly referred to as hexagonal boron nitride (h-BN). In another

embodiment, thermal loading material 1400 is a cubic boron nitride (c-BN), more commonly referred to as diamond Boron Nitride. H-BN has soft, lubricious qualities while c-BN is hard and abrasive. Specific examples of boron nitride include the many of the coarse and fine mesh, high and low density CarboTherm™ BN powders available from Carbonundum Corporation, Amherst, NY (~~[www.carbon.com](http://www.carbon.com)~~) (CarboTherm is a trademark of Carbonundum Corporation). In other embodiments, one or more of the many grades of Boron Nitride available from Advanced Ceramics Corporation, Cleveland, OH (~~[www.adveceramics.com](http://www.adveceramics.com)~~) can be used.

Please replace the paragraph at page 16, line 24 through page 16, line 31 with the following amended paragraph:

As noted, thermal loading material 1400 can also be aluminum oxide (Al<sub>2</sub>O<sub>3</sub>). In one embodiment, the aluminum oxide thermal loading material 1400 is the Aldrich product 23,474-5 aluminum oxide powder available from the Sigma-Aldrich Company, Milwaukee, WI. Other aluminum oxide powders could also be used depending on the desired characteristics of the thermally conductive dielectric coating 1502. In one embodiment, the grade of aluminum oxide powder is between 10-5000 mesh. The Technical Data Sheets for these and other aluminum oxide powders are available from Sigma-Aldrich, (~~[www.sigma-aldrich.com](http://www.sigma-aldrich.com)~~).